

# Andrew George Malcolm (1819–1856)

President of the Belfast Clinical and Pathological Society

1855–56

## Presidential Opening Address

Belfast Clinical and Pathological Society

27th October 1855

GENTLEMEN, It is with some diffidence that I proceed to execute the task which my position enjoins. Called to the important office of President by you, I must say, too flattering suffrages, it becomes my duty, according to official custom, to inaugurate the labours of a new Session. I do with some misgivings as to how far my address may become the importance of the occasion, or the credit of our Society.

This feeling is not diminished, I assure you, when I recall to memory the previous occasions, when you were addressed from this Chair, by men so deservedly eminent and accomplished as my predecessors. I rely, however, notwithstanding these influences, upon your forbearance and a hope that any imperfections which you may observe will be kindly pardoned.

Gentlemen, it is with no small feeling of pride, that I have it in my power to congratulate you on the prosperity of this young Society. We are but in our third year, and we number the respectable number of 107 members and I believe I may add with every prospect of a considerable increase. This undoubted success can only be explained in one way, that is, simply the insufficiency of previously existing institutions to satisfy the wants of the profession in this locality.

The *desideratum*, referred to, your Society has been the means of affording; and you will remember, as a complete confirmation of what I now state, that, on the very first day when our standard was raised, upwards of fifty adherents were enrolled as original members.

To you amongst this audience who are in membership it is of course unnecessary for me to go over beaten ground, and point out the different objects at which we aim, or to explain the means by which we hope to attain them; but, for the sake of those strangers who have honored us with their presence and who are not so informed, I would beg to premise the expression of the few thoughts with which I intend to trouble you on this occasion, by advertising for a moment to the principles of our Society.

The cultivation of pathology in connection



with clinical observation constitutes the grand basis of our operations. Pathology in its widest sense, as a theoretical science of disease based on physical, chemical and anatomical facts and a clinical observation, which shall ever associate the morbid indications in life, with the traces which are detected in death. But further, in our view of the domain of clinical study, we include all therapeutic *data*, which may tend to throw light on pathology, restore the normal conditions of the system under disease or arrest the tendency to death.

In this wide field there are several departments which more especially attract our attention. Such are the study of Pathological Anatomy, Pathological Chemistry, Pathological Histology, the study of rare and difficult Cases noted at the bedside and the examination of them in the person of actual patients introduced to our meetings for inspection, the observation of interesting, though they may be isolated, Clinical facts,—the results of medical statistics—the history and results of new and special modes of treatment, including the exhibition of new instruments, and new articles of the *Materia*

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*Medica*,—and lastly, the open discussion of debated points in practice.

Such is the scope of our transactions, and none can doubt, that in it, we possess “ample room and verge enough” to satisfy almost every form of professional predilection.

It may be worthy of more particular mention, as a distinguishing feature of this, in comparison with the metropolitan Pathological Society, that we encourage free discussion after the introduction of every subject and we do this on the good old fashioned principle that in numbers there is wisdom. For it does not unfrequently happen, that “as all looks yellow to the jaundiced eye”, so the perverted apprehension of *one*, may lead to an erroneous view of a subject, which can only be satisfactorily be corrected by an appeal to the common sense of *many*.

I am quite aware that some have made material objection to discussion, on account of their tendency to overstimulate the forward and ready speaker and discourage the diffident and slow, though it may be superior, member. A *posteriori*, however, we have found this objection to be groundless. Hitherto our debates have been generally conducted in a temperate and gentlemanlike manner, though I must say, much of this happy result is to be ascribed to the Steadfastness and Adroitness in handling the reins, for which my predecessor was so happily distinguished. Besides it must not be overlooked that the friction of mind with mind, like the flint and steel, is calculated to elicit scintillations of genius, which unimpassioned occasions would ever fail to produce. Indeed discussion when tempered by reason cannot but have a suggestive influence fraught with valuable results. It is only thus, that many fallacies especially those coming from a warped judgement can be cleared away, and the virgin ore of truth be separated from the surrounding mass of error. I consider that in this respect our own particular department of Knowledge more imperatively calls for some such winnowing process than perhaps any other. So much is taken for granted—so easily are we apt to be content with half proofs—so entangled are our minds by foregone conclusions—so defective is our science in solid first principles and the true nature of the most elementary of our foundations that it is little wonder that almost any enquiry undertaken to advance our Art is beset with innumerable difficulties: and it is only by looking at the subject from different points of view by a variety of minds, that anything like a clear method for arriving at true solutions can be ever gained.

Gentlemen, were it in my power I should desire

that one and all on this the opening of a new session should be inspired with feelings akin to my own, which I need not say, are ardent and zealous for the welfare of our Society.

When deeply impressed with the importance of a particular pursuit we enter upon it with a buoyancy which removes half the burthen incident to the prosecution. We go forward with an unfading trust that good and nothing but good to ourselves individually and the body at large, can result from every step we take; and we feel stirred up to a capacity for increased exertion, exactly in proportion to the amount of enthusiasm we experience. Now, is there anything in the nature of *our* Society which can supply this desired zeal? I think there is. I think, if we reflect upon the great objects we all have in view, upon the important fact so well put by Stokes of Dublin, whom we are proud to call our honorary member,—that every new fact in pathology or pathological anatomy may be regarded without exception as either immediately or ultimately fruitful in its application to practical Medicine. Nothing can be observed in vain. Even the very treatment of diseases is, as Latham in [support]<sup>1</sup> of a truth so well known to Hippocrates himself (another name dear to every scientific physician) so justly writes, a part of their pathology. “What they need and what they can bear, the kind and strength of the remedy and the changes which follow its application are among the surest tests of their nature and tendency.”

Westl, the great histologist of Vienna, has well remarked that the method of research at present followed in the cultivation of pathology has opened out a rich mine of results. And in an excellent remark of (Simion?) we find it laid down that Pathology has been the referring and rationalizing principle of Medicine and not the least of its immense advantages has been its invaluable tendency to counteracting mischievous practice, teaching us to refrain from doing harm and I will venture to add as the unanimous impression of the present time its capability in numerous cases of pointing out the only rational and safe mode of conducting a case to a happy termination. I need only mention the present management of diseases of the organs of the Lungs and Heart, and ask you to compare it with the treatment of the same maladies but three years ago, to prove the inestimable value of the aid which pathological science has afforded.

Now I say gentlemen that that mind which is not improved and stimulated into fresh energy by

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<sup>1</sup> gap in original copy of the address.

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participating in the information and reflection which our meetings here from week to week so abundantly afford, and which pertains to topics such as those I have alluded to, cannot be other than insusceptible of improvement.

Ours, gentlemen, is a noble aim. While we are directly benefitting ourselves, we are not the less advancing the causes of our profession. Though none of us may attain the glory of a great discovery or an invention, still the materials we are gathering with patience and assiduity from the countless stores of nature must undoubtedly tend to hasten the period when accumulated experience will have placed the practice of our art upon an irrefragable basis. Let but nature be our only guide, whether speaking to us from the pallet, the deadhouse or the laboratory—

“Unerring Nature, still divinely bright,  
One clear, unchang'd, and universal light  
Each motion guides, and every nerve sustains  
Itself unseen, but in the effects remains”

And here, gentlemen, I would bring to your recollection the important advances which Medicine has made by the introduction of the pathological element as affording data for improved medical reasoning without which no hope of real progress in our science can be entertained.

In the pre-scientific age of the profession, medical knowledge was limited to the limited results of unguarded experience on the one hand, or groundless hypotheses on the other. In point of fact it is only of late years that a truly scientific era has commenced. Though for upwards of 250 years the domain of pathological anatomy has to a certain extent been cultivated, yet we find that not till 1767 when Mogagni's "De sedibus et causis morborum" appeared, can we say that its culture was conducted upon anything like scientific or rational method.

Our own Baillie followed and laid the foundations of British Pathology. But for the unfortunate want of a correct idea of the intimate structure of the human body physically and chemically, which has only been supplied within the last 15 or 16 years, the advance of the study referred to could not be else than imperfect and unsatisfactory.

We cannot it is true but acknowledge with the deepest gratitude the great services which discoverers in anatomy, both healthy and morbid have rendered the profession from time to time. Need I particularly allude to the undying names of Harvey, Hunter, Bell, Hall, Laennec, Hise, Cooper and many others which will at once spring to your attention. But the observations which these were enabled to make

must be deemed comparatively isolated and fragmentary, when we look forward to the brilliant field, rich in mental wealth, which lies before the vision of the present generation.

It is impossible that it could have been otherwise. Indeed until lately the very data on which any practical conclusions could have been founded were in great part a mystery. The pioneers of medical science may be divided into three classes,—those who brought to light new facts, those who facilitated the discovery of new facts by improving the methods of observation and lastly those who, perceiving the hidden chain that binds these facts in indissoluble union, can exhibit to the world one or more of the laws of the Great Physician Himself. Now until the present age the discoverers in scientific Medicine have been perhaps without exception limited to the two former classes, and consequently the proper materials for generalization have only now sufficiently accumulated; and it is reserved for succeeding time to reveal those great and doubtless simple laws (not theories) which truly regulate the morbid phenomena of animal organisation. "In point of factual knowledge" says Osterlein of Heidelberg— "even a Celsus or Hippocrates, a Boerhaave or a Sydenham would be as ? in comparison with any practical physician or physiologist of the present day."

Since the days of the father of our art then, there has existed no more favourable opportunity for realizing the advances of medicine than the present and we should esteem it a privilege of no common kind to be enabled to take our part in contributing even in a small degree to this momentous result. Why, even the simple accurate observation of a single remarkable case at the present day may command an important influence on future medicine, while parts of similar reports in writings anterior to the present age will necessarily pass into oblivion. The reason is obvious. The observations of the past age may be compared to the perceptions of a youth while those of modern times are the experience of the man.

Is it not therefore a wise step for individuals of the present generation to bind themselves together in societies such as ours? For it is only by such means that we can hope for the full value of the resources within our reach and which as I have mentioned transcend all the boasted appliances of former times can be attained.

Individual exertions may it is true occasionally be attended with invaluable advantage to the profession at large; but this is rare compared with what a number of minds in council have it in their power to bestow. Individuals are frequently

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prejudiced—they cannot divest themselves of the slowly formed but inveterated influences of education and especially educational authority. Their capacity, their skill, their inclinations vary so indefinitely that most probably no two could separately conduct the same enquiry or make the same observations in the same manner or with the same result.

When however the many are brought together as one assembly with definite objects in view, their varied powers are found to radiate towards the one centre and the happy result is the discovery of truth. Not that I deem truth always lies in numbers but I believe that where difficulties exist in the search for truth they can be best overcome by the varying influences of a multitude of educated minds.

There is yet another point of view in which I would desire the operation of this society to be viewed. In our prospectus issued in 1853 amongst the inducements held out to the profession, was one which I deem of great moment namely the collection and analysis of semeiological phenomena, more especially the recording for future reference of all unusual interpretations of the signs and symptoms of disease.

In our every day practice we meet with some case, which from some peculiarity arrests our attention. We cannot on the moment give a true signification of, interpret or solve the mystery. It is an unusual, let us say and as far as we know a unique circumstance. On reference we do not find it noticed in our accustomed authors. We perhaps hold a consultation. Still the mystery remains and nought but surmises or hypothetical reasonings is our resource. Now, it may be in our present condition most probable indeed that a similar case and with this interpretation too lies buried in some corner of one of that vast multitude of reports which are scattered up and down the literature of our profession in every conceivable shape, monograph, compilation, cyclopaedia, dictionary, essay, lecture or other work to be found on the shelves of medical libraries.

Members of a sister profession can, with the greatest facility, refer to the counterpart of any given case that may come before them in the legal archives of the Kingdom and thus render the experience of the past at once available for almost any emergencies. Now we in numerous instances have no such command. The information we want to arrive at may be accessible to one perhaps among ten thousand; but for the mass of the profession it is practically sealed. To accomplish this *desideratum* the powers of association is necessary. Doubtless in any circumstances it would be a work of time and entail

considerable labour, but I see nothing insurmountable in it. A body such as ours, in the course of a few years might form such a nucleus as would be easy of future development. Let us but continue to accumulate case after case in our general note-books, always keeping in view the semeiological element to which I have adverted, and the most obtuse amongst us would soon perceive the value of the undertaking.

In bringing these few remarks to a conclusion I would desire briefly to epitomise the advantages which members of this Society derive from their connection with it. 1st—Our meetings at this board tend to refresh our already acquired knowledge upon every variety of disease, New ideas, New facts, New analogies, are thrown up in the interchange of thought. Suggestions often for immediate practice are offered from hand to hand and that good feeling which inspires mutual confidence and respect and without which there can exist no real union of interest, becomes gradually strengthened amongst us. 2nd—Our country friends of whom I am happy to see so many here to-day are for the most part debarred from attending our meetings. Nevertheless they are not forgotten. The “Abstract” of our weekly proceedings informs them of the principal subjects brought before us; and in our annual volume of “Transactions” we supply the additional information derivable from papers published *in extenso*, and members’ remarks. 3rd—Further it is a privilege to which every member is entitled, to receive an authorized report of the result of chemical, microscopical examination of any morbid specimen he may choose to forward; and in our pathological museum which is being gradually formed he has the opportunity of referring at his leisure to many objects of great pathological interest and value. It not infrequently happens that the recent specimens exhibited at our meetings are reproduced by the artist in a permanent form on the shelves of our museum, as for example during the very last session there were exhibited some morbid remains of remarkable interest and rarely modelled which are in the specimens now lying before you in a state completely imitative of vivid freshness and reality.

The examination of such specimens when taken in connection with the detail of their respective cases in our “Transactions” supplies everything that can reasonably be desired from such a source; while in other instances again we employ the unerring pencil of the photographic process to stamp with lifelike accuracy the passing features of an important case.

And last though not least amongst the

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advantages must I mention the smallness of the annual subscription which places them at once within the reach of every member of the profession who may desire to avail himself of them.

And now, Gentlemen, I have only to add that the success of this Society depends much upon your cooperation, not simply as subscribers, but as working members. I would, therefore, urge you to contribute each your quota of information, either by forwarding objects of pathological interest, or reports of cases of clinical value, or personally imparting such information as you may have from time to time collected from your valuable experience. I conceive that every member of the profession is in some measure conscientiously bound to advance the interest of the body; but members of this Society established for the very purpose of gathering and disseminating the knowledge which constitutes true experience are still more imperatively called on to improve their opportunities for its benefit.

Much good is also in our power individually by using our influence in our respective localities to induce every hospital and dispensary attendant to join our banner. It is such men that are calculated to promote our objects in the highest degree, and I would further express a hope that the senior members of our body in particular would attend the meetings as often as practicable, not so much perhaps for the sake of deriving as of supplying information to the less experienced brethren. May I indeed ask this on my own behalf as well as that of the Society, for I am well aware of the difficulties with which the office I have the honour to hold is surrounded.

At the same time while I would feel grateful for the countenance of my seniors I shall yield to none in zeal and interest for the prosperity of the Belfast Clinical and Pathological Society.

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**Presidential Closing Address**  
Belfast Clinical and Pathological Society  
Conversazione  
30th April 1856

GENTLEMEN,—However much I might have wished to occupy, this evening, the position of a spectator or a listener, instead of the office which the partiality of my professional brethren has thrust upon me, I shall not shrink from fulfilling, to the best of my ability, the task which my situation, as retiring President of the Belfast Clinical and Pathological Society imposes; because I feel assured, that the same indulgence which has sustained me throughout the labours of the Session, which this evening terminates, will not be withheld on this—to me, at least—trying occasion.

I must say, that were my audience composed exclusively of my professional brethren, I should feel much more at ease, as the observations with which I would, under those circumstances, have occupied their attention, would naturally and genially flow, as from one medical mind to another, without the most distant risk of being misinterpreted or misunderstood. But, as it is, when I see around me gentlemen, eminently distinguished in other walks of knowledge—gentlemen, whom I may, in all truth, regard as the representatives of science and literature in this city, whose proudest boast was, and is, that it contained such men—I cannot conceal the difficulty of the position I hold. I would, however, trust, that in the remarks which I purpose to offer this evening, I shall steer clear of deserving the imputation that the medical element has been too strongly infused to render them palatable to a mixed audience.

Before proceeding to the principal subject of this address, I desire to express my feelings of heartfelt congratulation to the members of our Association on its past progress, its present position, and its future prospects. My non-medical friends will bear with me, when I tell you I am proud—confessedly proud, of the standing of the Belfast Clinical and Pathological Society amongst the Medical Associations of Ireland. But three short Sessions have passed over our heads, and we already number in our ranks upwards of one hundred and sixteen Members. When, three years ago, its foundations were laid, I little thought how far beyond my first anticipations would be the result of the work. In that little space of time our Society has extended its operations into all parts of the province of Ulster; and its most distant members feel its improving influences almost as vividly as if they were resident, and enabled to join

directly in its proceedings. This pleasing result of our weekly lithographed “abstract” is but a slight indication of what I trust may yet be accomplished, in the way of placing the resident and non-resident members more on an equality. The time may come when we may have our medical reporters, who will give our brethren at Letterkenny or Culmore full reports weekly of the doings and sayings of our medical parliament in Belfast.

Gentlemen, I am happy in having it in my power to state that, on last Saturday, we elected the thirtieth new member for this session—an evidence at once of our strength and of an evergrowing interest in the objects of the Society. However anxious and doubtful I might have felt as to the issue of its early struggles, the experience of each successive session has more and more confirmed me in my impression that the stability of our Society is real, inherent, and permanent; and that its existence has filled a vacuum which had been forming for many years past, especially in the midst of our local brethren. In the attainment of its present triumphant position, I would be doing an injustice were I to omit making the most honourable mention of the labours of my predecessors in this chair. The first volume of our “Transactions” is a sufficient index to the ability and zeal of the one;<sup>1</sup> and I have only to mention the name of Professor Ferguson to intimate to you the peculiar qualifications for the office which the other enjoys. (Hear, and cheers.) And need I add that, in your selection this day of my respected successor, there is afforded the best guarantee of a prosperous future. (Renewed applause.)

You will naturally suppose, gentlemen, that this language, in reference to our Society, savours rather much of the sanguine temperament. I confess I must yield to the soft impeachment. But I believe no new undertaking was ever yet projected into permanence without a large infusion of the element referred to amongst its promoters. And I know that those amongst my audience, who are acquainted with the incipient stage of this Society, will pardon me for any exuberance of feeling which the occasion has elicited.

Gentlemen, the guests of the Belfast Clinical and Pathological Society, permit me to wish you a hearty welcome to our second *conversazione*. Many of you will, doubtless, recognize amongst the various objects of interest which are this evening displayed before you, some which will remind you of a similar occasion this time last year; and, from what I know of the general impression which was expressed on the

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<sup>1</sup> Dr. T. H. Purdon.

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last occasion, I am not apprehensive as to the result of our present efforts to form a meeting which will be not altogether unattractive to the distinguished *savans* whom I see around me. On this occasion, however, it is my desire to draw your particular attention to the elements of advanced science, which may be gleaned by an inspection of the contents of this Hall. One impression which such examination must, I think, elicit in the minds of all, will be that of surprise; for you will meet with here, on almost every table, objects of scientific interest which do not seem, to a non-medical understanding, to be very intimately associated with medical practice. On the contrary, the devotee of pure science, who had never so much as opened a medical volume, would recognize in the great majority of the objects here presented, his most familiar acquaintances. Now, when I have shewn you that the medical mind considers all these same objects as equally interesting to him, it will not be too much to infer that there is an indissoluble connexion between science and true medicine. But I go further, and I state without any hesitation, that the progress of medicine has advanced, and will continue to advance, in a direct ratio with the advancing strides of science. We do not, therefore, consider ourselves as diverging from the path of strict professional duty, when we issue our annual invitations to many whose knowledge of medicine is limited to the painful experience of the *armamenta medicinæ*. On the contrary, in summoning you to our annual gathering, and in placing before you on these occasions objects of equal interest to us both, we do so with a view to impress upon one and all the grand presiding fact, that science, in all its divisions—in all its apparently varying characters—call it by what title you will—is one and the same—the discovery and interpretation of the laws of our common Creator.

Gentlemen, I deem the present a fitting occasion for illustrating this truth. The subject admits of endless amplification. It is not my intention, however, to do more than touch the salient points; for this will be quite sufficient to render manifest the validity of the proposition, that medical progress only became real when science became the pioneer and guide of medicine. Like to the benighted traveller, who walks on and on in the vain hope of reaching his destination, but who, in reality, has lost the true path, so medical knowledge, in the early times, endeavoured to advance by the changing light of *ignes fatui*, which successive hypotheses had engendered from time to time. It was reserved for science to light the traveller on his way, to dissipate the clouds which hovered o'er the road to truth, and

to remove, with a single touch, obstacles to onward progress which seemed colossal to a prescientific age.

The progress of human knowledge, in any of its numerous departments, seems, in my view, to include three stages. In the earliest period, the mind of man was bewildered with the number, variety, and extent of the objects in nature submitted to his contemplation. Man, under such circumstances, may be compared to a child; his observing powers are over-taxed, and his perceptions are necessarily intermixed, and almost shrouded in the inward imaginings, which the objects suggest. He is at this time incapable of true observation. The immensity overwhelms his feeble understanding; and in the attempt to describe what comes within the range of his senses, he loses himself in the vain endeavour to grasp the entire phenomena presented to him. In no department of human knowledge is this more evidently manifested, than in that of medicine. Truly, may the first steps here be deemed, the impress of conjecture and superstition. It seems to us of the present day passing strange, that the early writers in medicine displayed such gross imperfection with regard to the structure and functions of the human frame. Is it not surprising that for a long period subsequent to the time of Hippocrates, the veins and arteries were undistinguishable; that nerves, and sinews, and ligaments, were designated indiscriminately by the same terms; that Aristotle's arteries contained only air, which the windpipe conveyed from the atmosphere to the heart, and at a later period, in the time of Galen, that the veins were supposed to originate in the liver, and the arteries in the heart, and that that large muscle which separates the thoracic from the abdominal cavity was, in some way or other, connected with mental emotions? It does seem strange, indeed, that even up to the fourteenth century of the present era, the only movement which the blood was supposed to possess was that of flux and reflux, and it was only about this time that any rational ideas were beginning to be entertained as to the action and uses of the valves which are observed at the origin of the two great arterial trunks, those situated between the chambers of the heart and the delicate semivalves of the veins. Does it not, I say, strike us with amazement that Berengarius and Vesalius were the first to show the instability of the ancient doctrine, that the intermixture of the two kinds of blood, which the most ordinary ocular demonstration was sufficient to discriminate, was effected by means of a filtering process through the *septum ventriculorum*, or the partition between the right and left chambers of the

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heart? But it is, perhaps, still more curious to reflect, that the very first step towards a solution of the great problem of the circulation of the blood, sprung directly from the agitation on the question, at this time widely debated in the medical world, viz. if the septum (referred to) be, as was proved, impervious, where can the meeting of the arterial and venous blood be accomplished? And it is certainly a fact, of equal interest, that the individual who had the honour of proposing a clue to remove the difficulty, was no other than a theological writer, the unfortunate Servetus, who was the first to suggest the transit of the blood *through the lungs* from the right side of the heart to the left. Here I must diverge a little to state, that I am quite aware that Servetus' claims as a discoverer have been questioned, and that his views have been deemed, by some, as a mere hypothetical proposal for getting over a difficulty; but a reference to some passages from his work, entitled, "Christianismi Restitutio" (of which, by the bye, it appears only two copies have come down to us), abundantly proves that he had *reasoned* upon the facts presented to him, and inferred the truth therefrom. Some short time later, Andrew Cesalpinus, having observed the swelling of the veins *below* ligatures, bethought him that the blood must have a movement in these vessels, in a direction from the extremities towards the heart; and this idea was still further corroborated by Fabricius, who, having more carefully examined the disposition of the valves of the veins, which Sylvius had previously discovered, ascertained that they were all turned towards the heart, and thereby became obstacles to the return of the blood to the extremities. Here was the first light shed upon the nature of the general circulation; and it does seem an object of great wonder to us at the present day, that it was reserved for a later than Fabricius to unfold the true character. Reasoning upon the facts thus ascertained, and believing that the movement of the blood in its vessels was fully established, HARVEY, in the year 1616, conceived the happy idea of instituting a series of experiments to determine the exact course of the blood. He compared the different effects, when a ligature was thrown round a vein, and an artery; and he placed the results in conjunction with the known direction of the valves, and, in a comparatively short time, was enabled to satisfy himself that the blood is impelled by the left side of the heart, in the arteries, to the extremities, and thence returns by the veins into the right side of the heart; and he further proved, that the pulmonic circulation is but a continuation of the larger. In this manner he gave a complete theory on

the circulation.

Now, let us pause a moment to inquire how it was that this, the most important physiological discovery up to his day, was effected. It was impossible for Harvey to see the current in its entire course. It is, therefore, an inference—but an inference so based upon a series of acknowledged facts that the demonstration becomes complete. Harvey was asked, on one occasion, What induced him to think of the circulation? And he replied, that when he took notice that the valves in the veins, in so many parts of the body, were so placed that they gave a free passage to the blood towards the heart, but opposed the passage of the venal current the contrary way, he was incited to imagine that, so provident a cause as nature had not placed so many valves without design; and no design seemed more probable than that the blood should be sent through the arteries and return through the veins, whose valves did not oppose its course that way. Whewell, in commenting upon this discovery, states that Harvey must have possessed clear views of the motions and pressures of a fluid circulating in ramifying tubes to enable him to see how the position of valves, the pulsation of the heart, the effects of ligatures, of bleeding, and other circumstances, ought to manifest themselves in order to confirm his view; and that he had referred to a multiform and varied experience for the evidence that it was so confirmed. The simple fact is, the *elements* of this great discovery were previously well and generally known. Fabricius, as I have observed, was upon the very verge, yet missed it. He supplied, however, the last link in that chain of evidence which put Harvey upon the track. Harvey discovered the circulation, not in the manner that a new mineral or a new plant might be casually observed for the first time, but solely as an inductive truth. He had the same facts to deal with as many of his predecessors. In their hands they were isolated, unproductive, and non-suggestive. He was the first to place them in relation, harmony, and mutual dependence. And, in the true philosophic spirit of Baconian reasoning, he cast aside the unsupported imaginings of ancient medicine, seized the facts actually observed, constructed others with his own hands, and raised that immortal structure which the progress and the test of time have only tended to consolidate. Harvey was a true disciple of nature. Whatever, before his time, had had her sanction, he was satisfied with. He himself questioned her eagerly, and carefully noted her replies; and, though totally and necessarily unacquainted with the modern facts of natural philosophy or physiology, he unveiled to an



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astonished world the beauty and simplicity of the Creator's design.

This reference to one of the great eras in physiological history leads me to my second proposition, that the second stage in any department of knowledge is distinguished by the prevalence of a rational observation, or, in other words, the acquisition of philosophic truth by a process of inductive reasoning.

Though Bacon was the first to insist upon this particular method of investigation, though he was the first to throw this yoke upon the ardent labourers of the mental world, still we find in the circumstances connected with the growth of the grand discovery to which I have just drawn your particular attention, there is abundant evidence to prove that Harvey had anticipated the very system with which the name of Bacon will be for ever associated.

As another memorable instance of the power of rational observation, I may here allude to the splendid discoveries of Sir C. Bell, and later still, of Dr. Marshall Hall. In this particular department of physiological research, the conjectural age seems to have been unusually protracted. Galen taught that the nerves are the channels of perception, but he, and for a long time his successors, not unfrequently confounded nerves and tendons. The division of the nerves according to their connexion with the nervous centres, the examination of the different ganglions or knots which occur upon them, and the unravelling of the brain according to its proper structure, was the work of Willis in 1664. But all this came far short of the views which Bell and Hall for the first time propounded to the world, and these, be it remarked, were simply the result of the most careful, but at the same time ordinary observation and experiment as a basis, and of a calm judgment upon the data thus laboriously established. It must be remembered, however, that there is a considerable difference in the character of these two discoveries. Sir C. Bell dissected the nervous ramifications, and at the conclusion of his work was enabled to say with the utmost confidence, this is a nerve of motion, and this other is a nerve of sensation.

On the other hand, Marshall Hall predicates certain functions of a portion of the nervous system, based chiefly if not entirely upon clinical observation, and the result of systematic experiment. The object of both, nevertheless, is ultimately attained in the same way. In this and the preceding example, it will be observed, that most important advances were made in medical knowledge without other aid than what a well-regulated observation was sufficient to impart.

But even these, great undoubtedly as they are, were but a small portion of that knowledge of the circulation and the nervous system which even the merest tyro of the present day possesses. We are now cognizant of the most intimate nature of the vital fluid, and its actions in the minutest vessels, and also of the nervous substance wherever situated.

These considerations bring me to the last stage through which our own knowledge has passed, namely, that which is characterized by the result of rational observation, aided by scientific instruments. I allude especially to that vast increase of knowledge which is mainly due to the careful use of the MICROSCOPE, the employment of chemical analysis, and the result of electric agents, in health and disease. Wherever these agents have had the proper field to labour in, the yield has been unprecedented; though it must be admitted that all are as yet in an infant condition, but such as promise for the future the brightest prospects. (Hear.)

It were totally impossible, in the brief space which I intend to occupy, to refer in a particular manner to these immense results. I shall, therefore, confine myself to a notice of that new world which the revelations of the microscope have unfolded to the medical practitioner. We are accustomed to speak of the immensity of space; and, indeed, the successive improvements in the means for discerning the countless worlds that surround us have even yet barely enabled us to possess the faintest idea of the infinity of Providence. When astronomers tell us that stars are visible, by means of instruments, whose light must have occupied a period of many hundred years in traversing that vast interval of space between them and us, we cannot but feel the awfulness and majestic sublimity of the "ways of the Almighty." But if such be our impression when contemplating nature upon her grandest scale, let us remember that there is another extreme wherein we have worlds, which, though invisible to unaided vision, present a perpetual succession of objects to excite our wonder, and teach us the great truth of the unfathomable depth of the wisdom of the Infinite. In the successive improvements from the time of Seneca, who, in the first century, wrote for the first time that small and indistinct objects become larger and clearer in form when seen through a globe of glass filled with water, down to the present year, when objects are magnified hundreds of thousands of times, a succession of improvements has enabled us to state, that as each step made towards the present perfection of the instrument has opened up new conditions of existence unknown to previous observation, so there

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is every reason to believe, that we are still far from being in possession of the highest capabilities which the instrument is calculated to afford. Just as the hazy nebulae in the time of Herschel have been clearly analysed by the six-feet parabolic speculum of Lord Rosse, so it is not unphilosophical to assume, that there are still wonders in the microscopical existence which some future microscopist will be yet enabled to discern. (Hear.)

In regard to the influence which has been felt, through the whole domain of physiology, by the use of the microscope, I believe I may say, without fear of contradiction, that it has been the means of completely revolutionizing the knowledge of animal structures which prevailed prior to its introduction. What modern chemistry has done in elucidating the composition of the materials concerned in secretion and nutrition; what the stethoscope has effected towards the detection of thoracic disease; what our knowledge of electricity has enabled us to predicate concerning the phenomena of the nervous system, have, I would say, been far excelled by the mass of facts in anatomical, physiological, and pathological knowledge, which is due to the scientific use of that queen of instruments, the microscope.

We may date the commencement of micro-anatomical study, in the year 1660, when the celebrated Marcello Malpighi commenced his inquiries upon the blood, which have been the foundation of all subsequent knowledge upon this subject. It is recorded that he was the first individual who was favoured with that most wonderful sight—a view of the capillary circulation in the living animal; a spectacle which even at the present day, and though often observed, ever excites our greatest wonder. Indeed we can scarcely imagine the intensity of the emotion it must have originally called forth in the mind of the celebrated discoverer. It proved in him the strongest stimulus to extended research; and we find that on the nature of almost every tissue, in both the animal and vegetable world, he has thrown so much light, and by means of what would be now regarded as very imperfect instruments, as to have anticipated much of the boasted knowledge of many of his successors.

I must pass over the names of Leuwenhoeck, whose untiring industry in minute anatomy the Transactions of the Royal Society sufficiently establish; also the names of Ruysch, Sömering, Prochaska, and Lieberkhun, all of whom have left imperishable names in the history of microscopic anatomy. I can also but merely mention the name of our celebrated countryman, William Hewson, in

whose experimental inquiries, the results of his anatomical investigations were so accurate, notwithstanding the imperfection of the means at his command, that subsequent observers have been only enabled to confirm them.

The “observations” hitherto referred to, it must be remembered, were made by means of un-achromatic instruments, and no steps were taken to remedy this great defect, till about thirty years ago, when the first compound achromatic was presented to the French Academy of Sciences, and shortly afterwards, in 1826, the first of this kind was constructed in this country. Amongst those to whom we are indebted for this highly important improvement, without which, indeed, the best compound instrument would give less perfect results than the commonest single lens, must be mentioned the names of Dr. Goring, Dr. Hodgkin, and Mr. Lister. This last-named gentleman is, perhaps, the most deserving of renown, for his combination of lenses, constructed in 1829, has, to use the words of Mr. Quekett, “tended more than any other to raise the compound microscope from its primitive and almost useless condition, to that of being the most important instrument ever yet bestowed by art upon the investigator.” Now, who think you was this Mr. Lister? A London merchant, who, in the midst of a large and pressing business, was yet enabled, by his great talents and untiring energy, to lay the foundation of the true principles of achromatism, and in his spare moments to carry those principles into practical realization.

There have been many instances in the history of discovery of similar manifestations of genius in the persons of those who were never permitted to indulge in “learned leisure.” Indeed, it seems to have been a favourite system which nature has ever adopted, to disclose her secrets to those who have laboured in the pursuit of truth amidst the greatest obstacles and difficulties; and this fact, for illustrations of which no one need be at a loss in the history of British science, should be an encouragement to all who enjoy the taste for scientific research in all the varied occupations of the world. (Hear.) There is no business so engrossing as not to leave many valuable moments for calm reflection or experimental inquiry, and no one can predict what may be the result in any individual instance of a devotion to some particular branch, of these leisure hours.

The important improvement in the instrument to which I have just referred, it is to be presumed was not without its immediate practical results. Every

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object previously observed was subjected to the new test, and thus many of the errors of previous imperfect observations were corrected, and novel phenomena for the first time established. Amongst this latter class none has exceeded in importance the new facts due to the labours of Schleiden in the vegetable, and Schwann in the animal kingdom. Their researches have eventuated in the establishment of, probably, the greatest attempt at generalization ever made in physiological science: I allude to the "cell theory," a theory which owes its origin to the suggestions which sprung out of a contemplation of the cells of cartilage, and a comparison of this observation with what was previously noticed in the vegetable world. It is difficult to conceive what may be the result of further developments of this grand theory, but I have no hesitation in stating my belief, that if we are ever to possess any more distinct knowledge than we already enjoy as to the growth of tissues, or the intimate phenomena of secretion and assimilation, it will come through the instrumentality of some development of this theory.

I might here appropriately draw your attention to some of the leading advantages which the use of the microscope offers to the medical practitioner. I might state what important aid in the detection of disease and its stages it can supply, and also what indications of treatment it affords; but recollecting the mixed character of the audience I have the honour to address, I shall consult my own convenience and yours by omitting particular mention of it altogether, further than to allude to the striking utility which this instrument has displayed in the detection of poisons and the adulteration of food.

It will be in the recollection of many that a few years ago a very complete investigation was instituted in London, by the Editor of the *Lancet*, in regard to the latter, the result of which has been to draw the attention not merely of the public, but also of the authorities, to this ruinous evil, an evil which presses too most severely upon the most unprotected classes of society. It has been fully ascertained that the effect of inordinate competition in the sale of articles of diet has been to lead to the *systematising* of many forms of adulteration, the detection of which was hitherto almost impossible, until the aid of chemistry and the microscope was resorted to. And well did they accomplish the object. Nothing was too complex or too minute for their united analysing power. This is more especially the case in reference to vegetable productions, which the most advanced knowledge of chemistry alone was frequently unable to satisfactorily distinguish, when mixed up in various

pulverulent combinations. The nature of these compounds, the microscope, in the hands of Quekett, Hassall, and Letheby, has established in a single trial almost without the slightest risk of failure. The time is, therefore, fully arrived when legislative interference is imperatively called for, to protect the masses of the community from becoming the prey of fraudulent dealers, and when every constituted authority should deem at least as necessary as the protection of property, the maintenance of the lives and health of the community. The subject of poisoning has lately presented itself to us in a fearfully revolting aspect. (Hear.) The rapid succession of these horrible cases recalls to our memories the records of ancient times, when scarcely any public character was safe. Fortunately, however, we, in the present day, are not without redress. I am glad to have it in my power to say, that the detection of almost every animal and vegetable poison is now so sure, that there is little chance of a failure of evidence on this score. Strychnine and hydrocyanic acid, hitherto deemed inaccessible to *post-mortem* tests, in consequence of the minuteness of the fatal dose, are now readily detected a considerable time after death. I can refer you to some experiments which will be submitted to you in the course of the evening, which will abundantly satisfy the most sceptical as to the practicability of this statement. It is by such triumphs of science that life is really rendered secure. The fear of death under the old system was shorn of half its terrors by the strong impression on the mind of the assassin that the law could not be enforced from want of conclusive evidence; so that in this respect, as well as the other points of view which I have brought under your notice this evening, well may it be said that the progress of science in general is fraught with the blessing of perpetually increasing prosperity to the whole human race, both as individuals and as communities. (Hear, hear.)

As I have set out with asserting the indispensable connexion between general and medical science, so must I conclude with reiterating the spirit of my proposition. There is none amongst us here this evening, who could not, I feel assured, assist in the great work of human amelioration—all, I trust, are more or less acquainted with some branch of scientific research; none of us is so absorbed in the duties of our respective callings, as not to have some moments of leisure daily, to occupy in pursuing some scientific object; and none, I am satisfied, can direct his energies assiduously and continuously on any one worthy object of study, without being, sooner or later, enabled to educe from amidst the multitude of

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interesting phenomena which his pursuit will elicit, *some practical truth hitherto unobserved*. Well, then, this is the first great step in discovery—the foundation on which, when aggregated, the superstructure of a “Law of Nature” may be ultimately erected. Here, then, we have an ennobling object to stimulate our endeavours after scientific truth. Well has it been said by Galen of old, that “the study of physiology is a hymn in honour of the Deity.” But he might, with similar effect, have stated the same of the study of nature in general. There need be no rivalries amongst *her* votaries: their reward is in the study itself, and the reflection that they are agents in the hands of Providence for disseminating “His praise through every land.”

And now, gentlemen, before I resign my trust into the hands of my respected successor, whom the voice of the Society at large has this day elected to the honourable office of its President, I would ask the members to accept of my very best thanks for the support which they have afforded in strengthening and consolidating the Society during the past session. Never were meetings better attended than our weekly reunions at the General Hospital; never was displayed so much enthusiasm in the transaction of the regular business, which engaged us from week to week; and never, I believe, was there a more auspicious prospect for the session which is now about to open. It is, gentlemen, my most earnest wish that you will, one and all, continue to cherish this common bond of union established for purely scientific purposes, and the common benefit of our profession and the public at large. May the spirit of improvement and of progress never die within us, but, on the contrary, may we continue to emulate each other in striving after the acquisition of that rational scientific knowledge of medicine, which, when chastened by practical experience, is the surest test of the accomplished practitioner, and the best safeguard of the common weal.